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ABSTRACT

The study explored the qualifications of learning-disabled college students by examining the academic performance (first year grade point average--GPA) of 179 learning-disabled and 249 nonlearning-disabled students classified by two objective admission criteria--either Scholastic Aptitude Test (SAT) or high-school class rank. Overall, the scores of the learning-disabled group were approximately .5 standard deviations lower than those of nondisabled students for high-school percentile rank, SAT verbal, SAT math, and first year GPA. Stepwise multiple regression analyses showed that high-school academic achievement was the best predictor of college GPA, with SAT verbal scores also contributing to the prediction. SAT math scores and learning-disabled versus nonlearning-disabled categorization did not add to the prediction of college academic performance. An additional comparison of high and low academically achieving learning-disabled and nondisabled students found that percentile rank in high school class correctly classified 92% of low academically achieving learning-disabled students but only 28% of the high-achieving students. Includes 8 tables/figures and 13 references. (DB)

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ACADEMIC PERFORMANCE OF ENROLLED LEARNING DISABLED AND NONLEARNING DISABLED UNIVERSITY STUDENTS CLASSIFIED BY TWO OBJECTIVE ADMISSION CRITERIA

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ACADEMIC PERFORMANCE OF ENROLLED LEARNING DISABLED AND NONLEARNING DISABLED UNIVERSITY STUDENTS CLASSIFIED BY TWO OBJECTIVE ADMISSION CRITERIA

Learning disabilities are among the handicapping conditions included under the provisions of Section 504 of the Rehabilitation Act of 1973. Since the passage of that law, which ensures the right to higher education for all "otherwise qualified handicapped individuals," the number of learning disabled students admitted to postsecondary institutions has increased dramatically (HEATH, 1988). Colleges and universities are now faced with the task of educating learning disabled students. Several reviews (Bennett & Ragosta, 1985; Hughes & Smith, 1990; Ryan & Heikkila, 1988; Scott, 1990) have pointed to a need for research examining the academic performance of learning disabled students matriculating at competitive postsecondary institutions. An analysis of the academic performance of learning disabled students should begin with an account of that subgroup's performance relative to typical college students: How do learning disabled students perform academically compared to their nonlearning disabled peers at the same university?

Generally learning disabilities are manifested by academic problems which cannot be overlooked in awarding a college degree. Determining qualified college applicants, is, therefore, particularly complicated in the case of

learning disabilities when the question is admission to a postsecondary institution where academic competition and achievement are emphasized and credentialed. Two of the most important predictors of college achievement, SAT scores and high school performance, which are measures reflecting academic aptitude, motivation, and achievement, have been normed on nonhandicapped populations. Learning disabled students challenge the norms. In a review of college admissions decisions, Willingham (1988) reported that high school performance and SAT scores received the highest weight in admissions decisions, and that those academic indicators were lower for learning disabled applicants relative to other applicants at the college of application.

The purpose of the present study was to explore the qualifications of learning disabled students by examining the academic performance (first year GPA) of enrolled learning disabled and nonlearning disabled university students classified by two objective admission criteria (SAT scores and high school rank). The following questions were addressed: How do enrolled learning disabled students stand on the SAT, high school rank, and college GPA compared to enrolled nonlearning disabled students at the same institution? How useful are objective admission criteria in predicting the academic performance of learning disabled and nonlearning disabled students at the same university? Do regression equations based on objective admission data predict the academic performance of learning disabled and

group according to sex and major field of study.

Because of missing admission data for the two upperclasses of juniors and seniors as well as transfer students, a decision was made to limit the analyses to include students who entered the university as freshpersons and to define academic performance as first year GPA. Complete data sets were available for two cohorts: students entering the university in the Fall of 1988 and 1989. Demographic characteristics of this sample of 428 undergraduates are listed in Table 1.

Insert Table 1 about here

Objective admission data (SAT scores and high school percentile rank in class) and college grade point averages (GPA) were supplied by the university records office. Standard SAT scores were recorded, and if multiple test scores were reported, the most recent SAT scores were used in the analysis. First year GPAs were obtained after the Spring semesters of 1989 and 1990. Table 2 presents descriptive statistics and a pairwise correlation matrix for each of the variables in the study for both learning disabled and nonlearning disabled groups.

Insert Table 2 about here

Results

Comparative Analyses

Comparative analyses examined the level of performance of the learning disabled group with respect to the level of performance of the nonlearning disabled group on typical

college admission criteria (SAT scores and high school rank in class) as well as first year college GPA. To what extent are the academic credentials of learning disabled students different from those of nonlearning disabled students at the same university? Such relative standing is indicated in Figure 1, which shows for the learning disabled and nonlearning disabled groups, a distribution of Z scores for high school percentile rank, SAT verbal and SAT math scores, and first year GPA. On all variables, the scores of the learning disabled group were approximately .5 Standard Deviations lower than the scores of the nonlearning disabled group.

Insert Figure 1 about here

An analysis of covariance with 1 between subjects factor of learning disabled vs. nonlearning disabled coding with SAT scores and high school rank as covariates, was calculated to determine if the groups differed in college academic performance. Table 3 shows no statistically significant difference between learning disabled and nonlearning disabled students in college GPA when correlations between the dependent variable and covariates were taken into account.

Insert Table 3 about here

Predictive Analyses

Relationships between academic performance in college (first year GPA) and commonly used predictors of college achievement, that is, tested aptitude (SAT verbal and math

scores) and academic performance in high school (rank in class), were examined for learning and nonlearning disabled students. Stepwise multiple regression analyses, reported in Table 4, showed that high school academic achievement, defined by high school rank in class, was the best predictor of college GPA with SAT verbal scores also contributing to the prediction. Values in Table 4 indicate the total amount of variance accounted for by the two predictor variables; SAT math scores and learning disabled versus nonlearning disabled categorization did not add to the prediction of college academic performance.

Insert Table 4 about here

To further examine the usefulness of high school rank and SAT verbal scores in predicting the college academic performance of learning disabled and nonlearning disabled university students, groups of high and low academically achieving learning disabled and nonlearning disabled university students were defined by a median split of GPA (2.55) based on the entire sample. This cutoff is similar to the university median GPA of 2.56. Logistic regression analyses, which estimate the probability of group membership, were employed to predict high and low college academic achievement, based on objective college admission criteria, for students within the learning disabled and nonlearning disabled groups. Stepwise techniques were used to develop a prediction model for classifying students. Results reported in this study are those of an internal

classification analysis. That is, each case of known group membership was used in developing the prediction model and then the same subjects were reclassified according to that model (Huberty & Barton, 1989). From a classification table, "hit" rates can be estimated; a "hit" results when a case from a particular group is assigned to the same group by using the prediction model which was developed. One way to assess how well the model fits the data is to compare the predictions to the observed outcomes.

For the learning disabled group, high school percentile rank in class, an academic achievement measure and indirect assessment of academic motivation, correctly classified 92% of low academically achieving university students but only 28% of the high achieving students for an overall hit rate of 68%. SAT scores did not add to the overall prediction of academic performance for the learning disabled students. No sex differences were obtained in the classification analysis for the learning disabled group. Figure 2 shows the classification table.

Insert Figure 2 about here

High school rank in class underpredicted a group of high achieving learning disabled students. Those high achieving learning disabled students (60% male; 40% female) who were misclassified on the basis of high school rank, had significantly higher SAT verbal scores ($n=49$; Mean=46; $SD=8.2$; $t=2.52$; $p<.05$) than low achieving learning disabled students who were not misclassified ($n=102$; Mean=42.3;

SD=8.02). SAT math scores (Mean=47.9; SD=8.9) for the misclassified high achieving learning disabled group were not significantly different from the SAT math scores (Mean=46.1; SD=10.5) for the correctly classified low achieving learning disabled students ($t=1.2$; $p>.05$).

Again, high school percentile rank in class was an important predictor of college academic performance among students not identified as learning disabled; in this case, 79% of the high achievers and 38% of the low achievers were correctly classified. High school rank tended to overpredict college achievement among nonlearning disabled students (see Figure 3).

Insert Figure 3 about here

SAT verbal scores added a small increment (3%) to high school rank in classifying high achieving nonlearning disabled students and in correctly classifying an additional 2% of the low achieving students, for an overall hit rate of 65% as depicted in Figure 4. Among the nonlearning disabled students, a significantly greater number of males than females were correctly classified as high or low academically achieving when SAT verbal scores were added to the prediction equation.

Insert Figure 4 about here

Discussion

Academic performance indicators (SAT scores, high school rank in class, and first year college GPA) were significantly lower (-.5 SD) for students identified as

learning disabled compared to their nonlearning disabled peers. There were no statistically significant differences in the college academic performance of learning disabled and nonlearning disabled university students when objective admission indicators, test scores and high school rank, were controlled.

High school academic performance was the most important predictor of college academic performance for both groups in this study; approximately 2/3 of high and low academically achieving learning disabled and nonlearning disabled university students were correctly classified by that admission criterion. Since learning disabilities impede academic achievement, it is not surprising that past performance, reflected in low academic standing in high school, would forecast low academic achievement in college. Nevertheless, a number of learning disabled students were maintaining a high academic standing in college contrary to expectations based on their high school record. Underprediction may have serious consequences because otherwise qualified learning disabled students might be denied admission to college based on high school performance. SAT scores, specifically verbal test scores, were significantly higher among this group of misclassified students indicating that SAT verbal scores can make a useful contribution to high school academic performance in enrolling qualified learning disabled students. Notable about the findings was that SAT verbal scores also improved

classification of nonlearning disabled males as high or low achieving. SAT scores enhanced the prediction of college academic performance for learning disabled as well as nonlearning disabled students over and above that afforded by high school record alone.

Because high school percentile ranks are not equivalent across schools, and, therefore, are difficult to interpret, a standard measure helps to clarify the meaning of high school record for both learning disabled and nonlearning disabled students. In their study of the use of admission tests for handicapped college applicants, Bennett & Ragosta (1985) concluded that the technical characteristics of the SAT (validity and reliability) did not explain performance disparities between disabled and nondisabled students. SAT score differences might reflect real aptitude differences between and within groups of learning disabled and nonlearning disabled students manifested in academic performance. Aptitude versus achievement discrepancies are a defining characteristic of learning disabilities, and patterns of discrepant academic aptitude and achievement indicators were observed among high achieving learning disabled students in this sample. Discrepant academic indicators, that is, low high school performance and high verbal aptitude test scores, need to be evaluated carefully in admissions decisions concerning learning disabled students.

From the results obtained here, it is not clear how the

low achieving learning disabled students differed from the low achieving nonlearning disabled students. The field of learning disabilities continues to grapple with issues concerning the definition of the disorder (Deshler, Schumaker, Alley, Warner, & Clark, 1982; Lerner, 1989), and the purposes served by labeling some low achieving students as learning disabled while other low achieving students are not labeled or entitled to special academic considerations in college (Sleeter, 1986; Ysseldyke, Algozzine, Shinn, & McGue, 1982). The progress of the learning disabled and nonlearning disabled students in this sample will be followed for four years to determine the utility of objective admission criteria in predicting academic performance over time and successful completion of university studies.

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Table 1

Demographic Characteristics of University Students With and Without Learning Disabilities

Demographics	LD (n=179)	nonLD (n=249)	All Undergraduates*
Gender			
Male	58%	59%	49%
Female	42%	41%	51%
Age	M=18.8 SD=1.1	M=18.8 SD=1.3	
Major			
Humanities/Fine Arts	16%	19%	13%
Natural Science/Math	5%	4%	6%
Social/Behavioral Sciences	19%	25%	15%
Interdisciplinary	26%	22%	22%
Education	9%	8%	5%
Engineering	3%	4%	10%
Food/Natural Resources	9%	9%	12%
Health Science	1%	1%	2%
Management	3%	3%	10%
Physical Education	8%	5%	3%
Ethnicity			
American Indian/Alaskan	1%	0%	.2%
Asian/Pacific Islander	1%	2%	1.5%
Black	5%	1%	2.2%
Hispanic	4%	2%	1.7%
White	77%	86%	67.8%
Nonresident/Alien	0%	1%	4.4%
Unknown	13%	9%	22%
Family Income (self-report)	**	**	Md=50,000

*University-wide data obtained from the Office of Institutional Research and Planning

**Family income data not available for LD and nonLD samples

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Table 2

Descriptive Statistics and Correlation Matrix for Admission Variables and GPA for Learning Disabled and Nonlearning Disabled Students

Group	Variable	Mean	SD	Correlations			
				1	2	3	4
LD (n=179):							
	High School Rank	40.9	20.6	1.0			
	SAT Verbal	43.9	8.5	-.28	1.0		
	SAT Math	47.4	10.2	-.29	.51	1.0	
	1st Yr GPA	2.4	.6	-.27	.20	.23	1.0
NonLD (n=249):							
	High School Rank	28.2	17.7	1.0			
	SAT Verbal	48.8	9.1	-.34	1.0		
	SAT Math	53.4	9.1	-.27	.51	1.0	
	1st Yr GPA	2.7	.6	-.35	.25	.14	1.0

Figure Caption

Figure 1. Mean, standard deviation, and range for high school percentile rank in class, SAT verbal and math scores, and first year GPA for learning disabled students relative to nonlearning disabled students.

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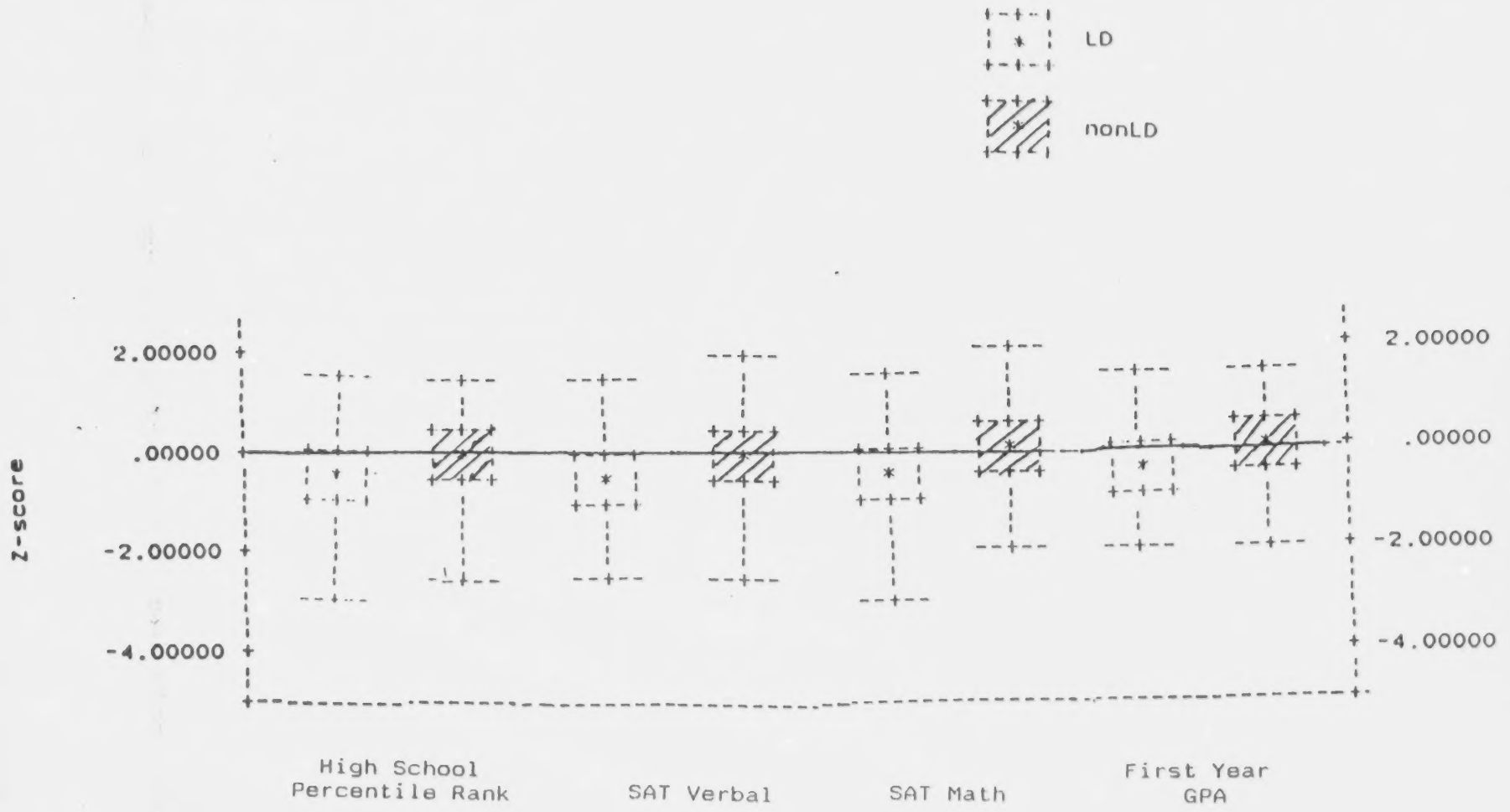

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Table 3

Analysis of Covariance: First Year GPA of LD and NonLD Students

Source	SS	DF	MS	F	p
Within	132.01	423	.31		
Regression	17.56	3	5.85	18.76	<.01
Between	.65	1	.65	2.07	ns

Table 4

Summary of Stepwise Multiple Regression Analyses for GPA: Learning Disabled and Nonlearning Disabled Students (N=428)

Dependent Variable	Independent Variables	r	R	R^2	p	Increment
1st Yr GPA						
	High School Rank	-.35	.35	.12	<.01	
	SAT Verbal	.27	.38	.15	<.01	.03
	SAT Math	.22				
	LD vs. nonLD	-.20				

Figure Caption

Figure 2. Classification of high and low academically achieving learning disabled students according to high school percentile rank in class.

LD

Observed GPA	Predicted GPA: Low	Predicted GPA: High	Percent Correct
Low	102	9	91.89%
High	49	19	27.94%
		Overall	67.60%

Figure Caption

Figure 3. Classification of high and low academically achieving nonlearning disabled students according to high school percentile rank in class.

nonLD

Observed GPA	Predicted GPA: Low	Predicted GPA: High	Percent Correct
Low	39	63	38.24%
High	31	116	78.91%
		Overall	62.25%

Figure Caption

Figure 4. Classification of high and low academically achieving nonlearning disabled students according to high school percentile rank in class and SAT verbal scores.

nonLD

Observed GPA	Predicted GPA: Low	Predicted GPA: High	Percent Correct
Low	41	61	40.20%
High	27	120	81.63%
		Overall	64.66%